Controlling Usage Of Network Resources By A User...
E00378.70179/JNA/DPM
Filed: February 8, 2002

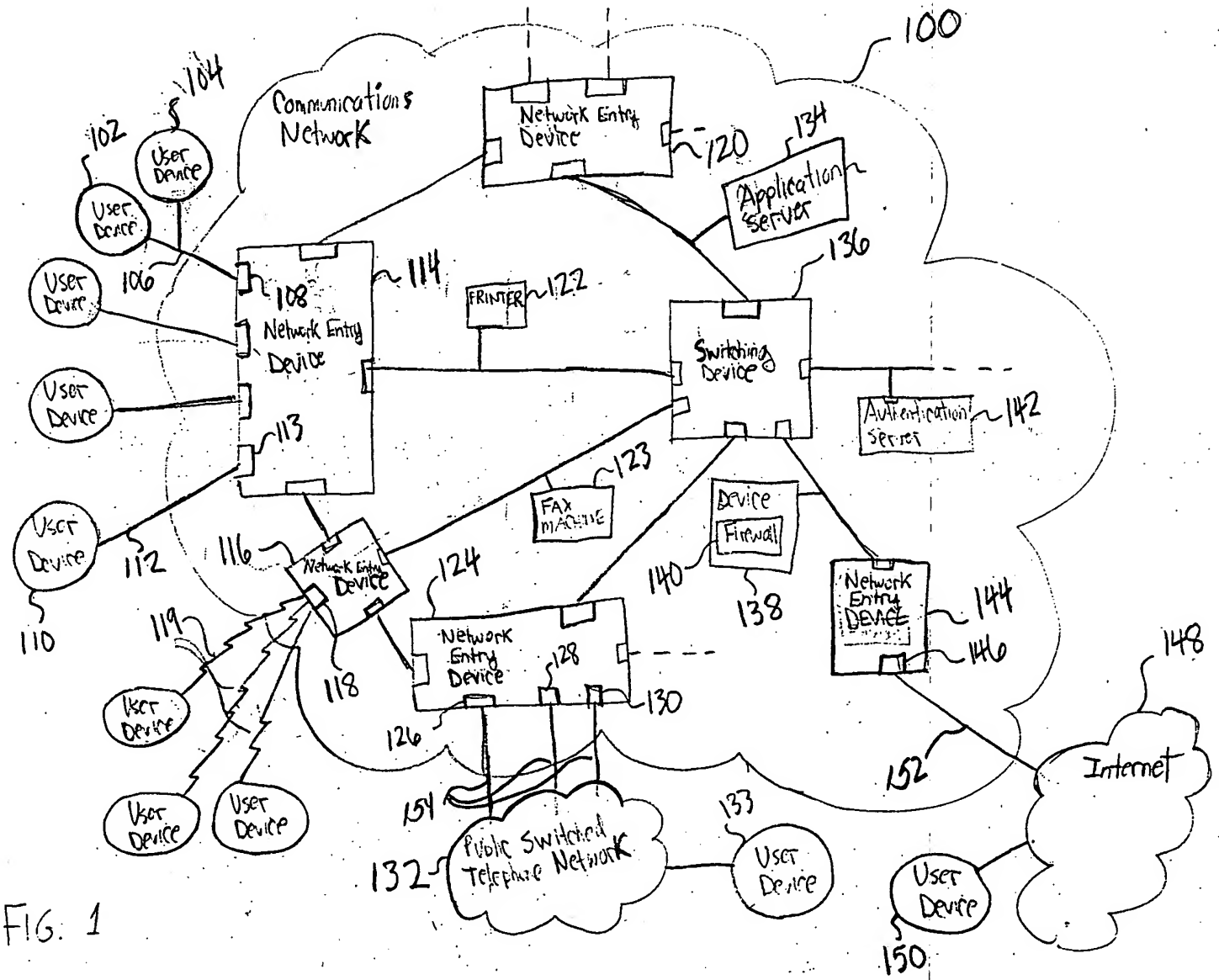

FIG. 1

200
202
204
206
208
210
212
214
Roles
Service Abstractions
Packet Rules
Rule 1
Rule 2
Rule 3
220
221
222
223
224
225
226
227
228
229
230
231

Fig. 2

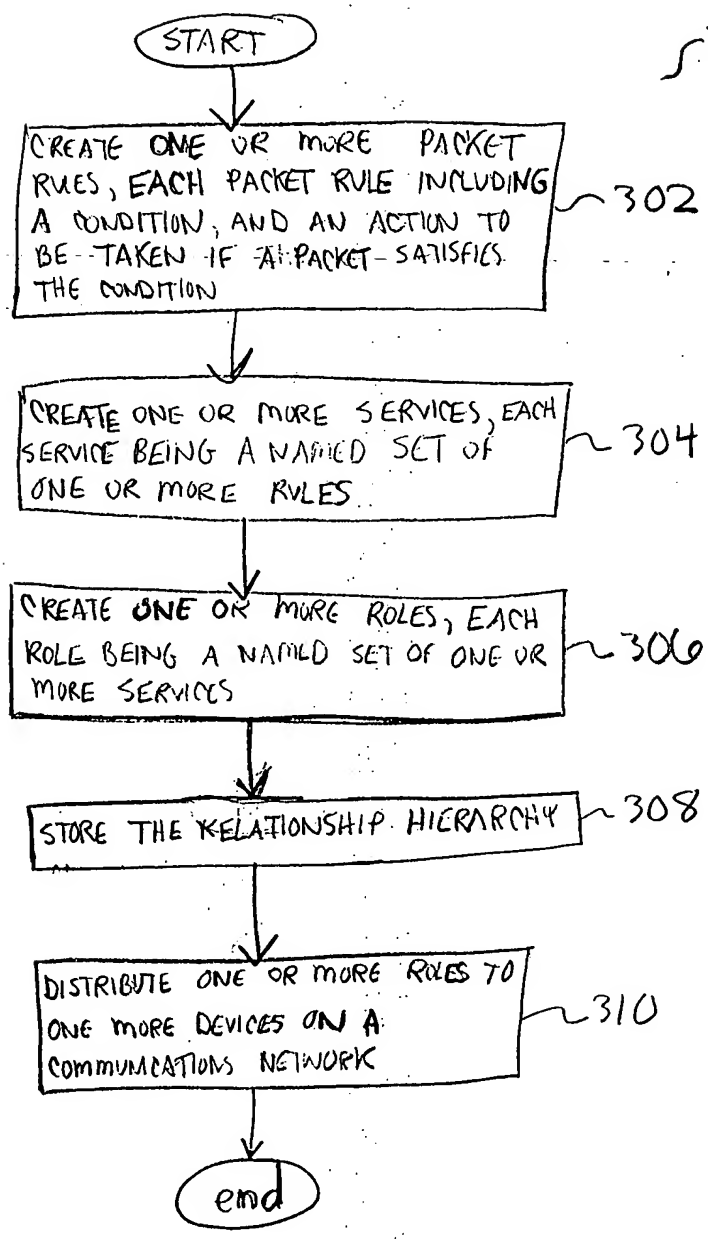

FIG. 3

Attorney Docket No. 70179/JNA/DPM

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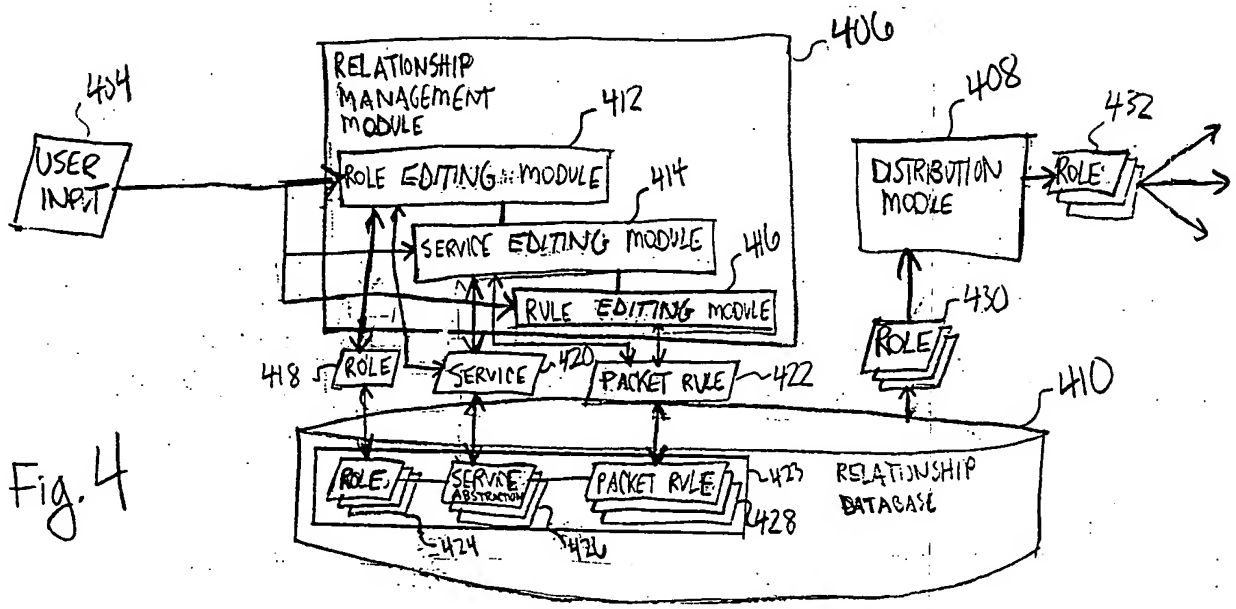

Fig. 4

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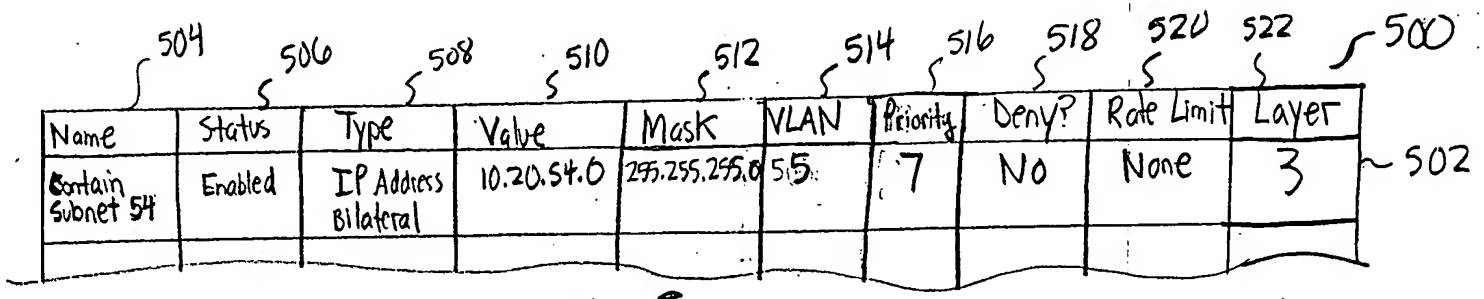
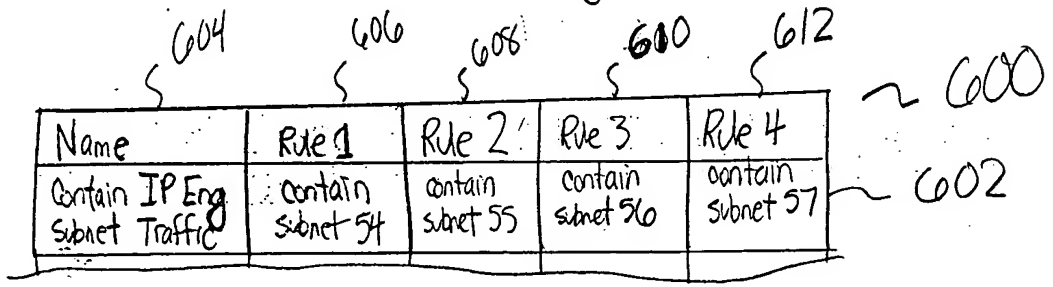


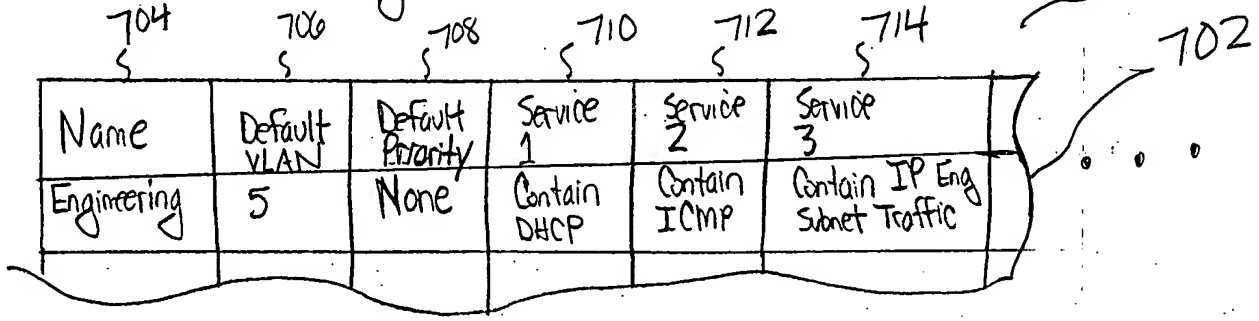
Name	Status	Type	Value	Mask	VLAN	Priority	Deny?	Rate Limit	Layer
Contain Subnet 54	Enabled	IP Address Bilateral	10.20.54.0	255.255.255.0	5	7	No	None	3

Fig. 5



Name	Rule 1	Rule 2	Rule 3	Rule 4
Contain IP Eng Subnet Traffic	contain subnet 54	contain subnet 55	contain subnet 56	contain subnet 57

Fig. 6



Name	Default VLAN	Default Priority	Service 1	Service 2	Service 3
Engineering	5	None	Contain DHCP	Contain ICMP	Contain IP Eng Subnet Traffic

Fig. 7

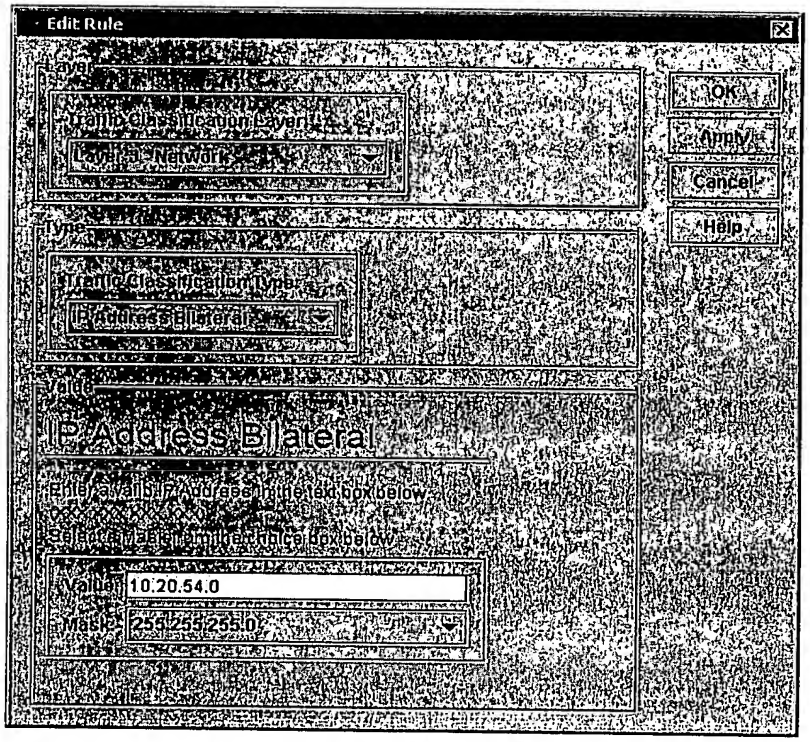


Fig. 8

EXPRESS MAIL NO. EL 955 155 705 US

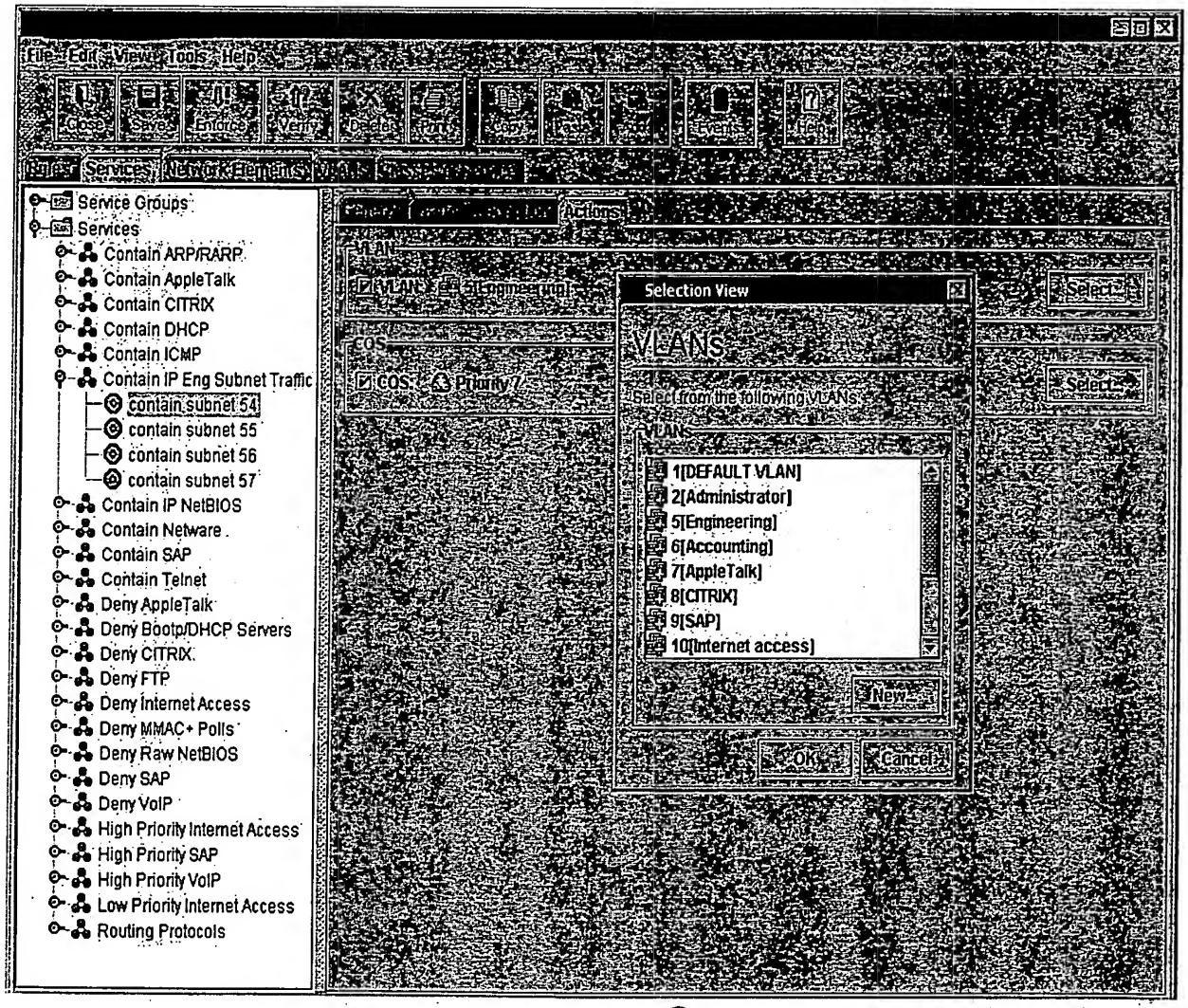

File Edit View Tools Help
Close
Save
Enforce
Verify
Delete
Refresh
Copy
Paste
Event
Help
Policy
Services
Network Elements
Service Groups
Services
Contain ARP/RARP
Contain AppleTalk
Contain CITRIX
Contain DHCP
Contain ICMP
Contain IP Eng Subnet Traffic
contain subnet 54
contain subnet 55
contain subnet 56
contain subnet 57
Contain IP NetBIOS
Contain Netware
Contain SAP
Contain Telnet
Deny AppleTalk
Deny Bootp/DHCP Servers
Deny CITRIX
Deny FTP
Deny Internet Access
Deny MMAC+ Polls
Deny Raw NetBIOS
Deny SAP
Deny VoIP
High Priority Internet Access
High Priority SAP
High Priority VoIP
Low Priority Internet Access
Routing Protocols
Actions
VLAN
VLAN
COS
COS
Priority 7
Select...
Selection View
VLANS
Select from the following VLANs
VLANS
1[DEFAULT VLAN]
2[Administrator]
5[Engineering]
6[Accounting]
7[AppleTalk]
8[CITRIX]
9[SAP]
10[Internet access]
New...
OK
Cancel

Fig. 9.

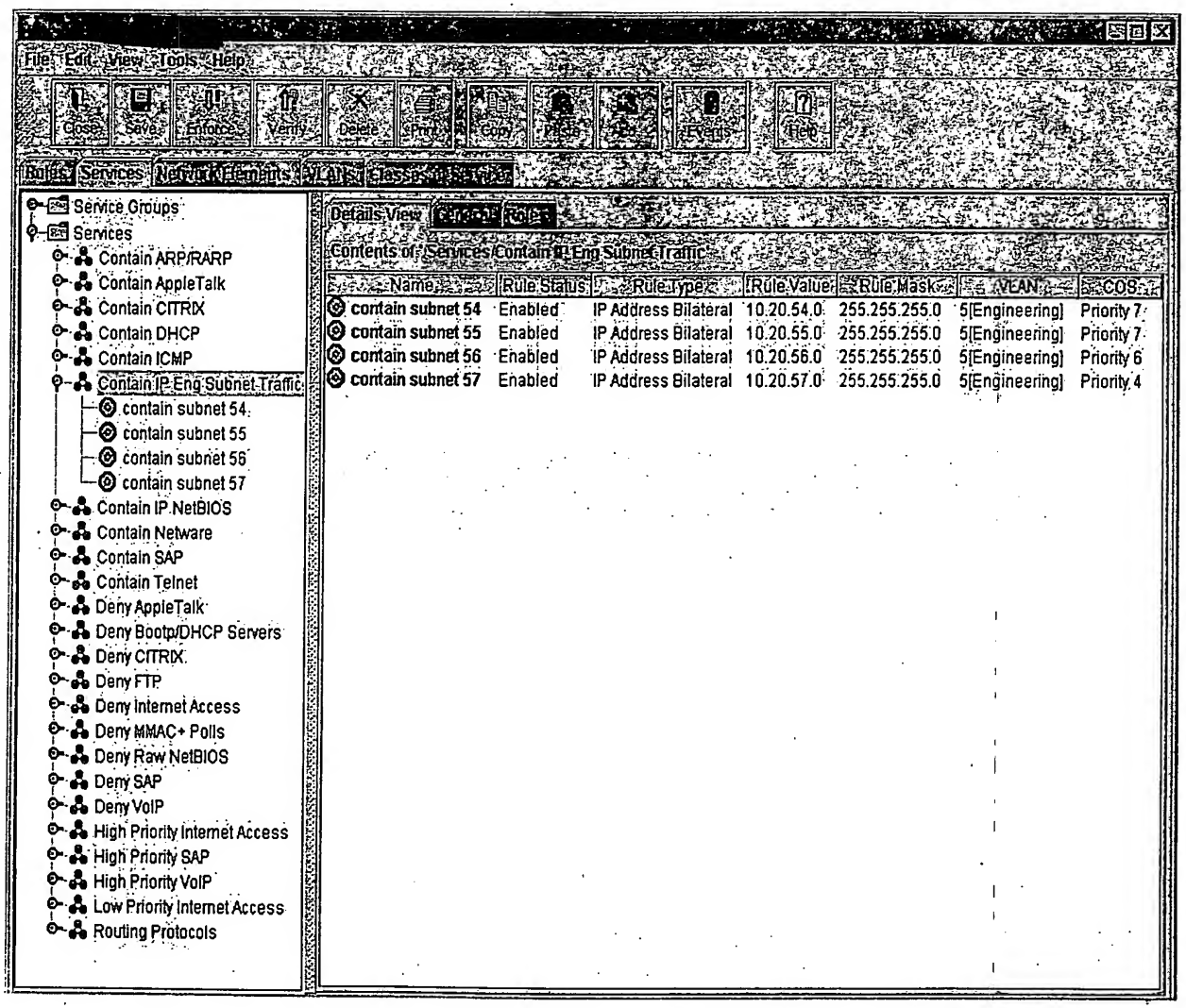

File Edit View Tools Help
Close
Save
Enforce
Verify
Delete
Print
Copy
Paste
Find
Help
Rules
Services
Network Elements
VLANs
Classes of Service
Service Groups
Services
Contain ARP/RARP
Contain AppleTalk
Contain CITRIX
Contain DHCP
Contain ICMP
Contain IP Eng Subnet Traffic
contain subnet 54
contain subnet 55
contain subnet 56
contain subnet 57
Contain IP NetBIOS
Contain Netware
Contain SAP
Contain Telnet
Deny AppleTalk
Deny Bootp/DHCP Servers
Deny CITRIX
Deny FTP
Deny Internet Access
Deny MMAC+ Polls
Deny Raw NetBIOS
Deny SAP
Deny VoIP
High Priority Internet Access
High Priority SAP
High Priority VoIP
Low Priority Internet Access
Routing Protocols
Details View
Graph
Table
Contents of: Services/Contain IP Eng Subnet Traffic
Name
Rule Status
Rule Type
Rule Value
Rule Mask
VLAN
COS
contain subnet 54 Enabled IP Address Bilateral 10.20.54.0 255.255.255.0 5[Engineering] Priority 7
contain subnet 55 Enabled IP Address Bilateral 10.20.55.0 255.255.255.0 5[Engineering] Priority 7
contain subnet 56 Enabled IP Address Bilateral 10.20.56.0 255.255.255.0 5[Engineering] Priority 6
contain subnet 57 Enabled IP Address Bilateral 10.20.57.0 255.255.255.0 5[Engineering] Priority 4

Fig. 10.

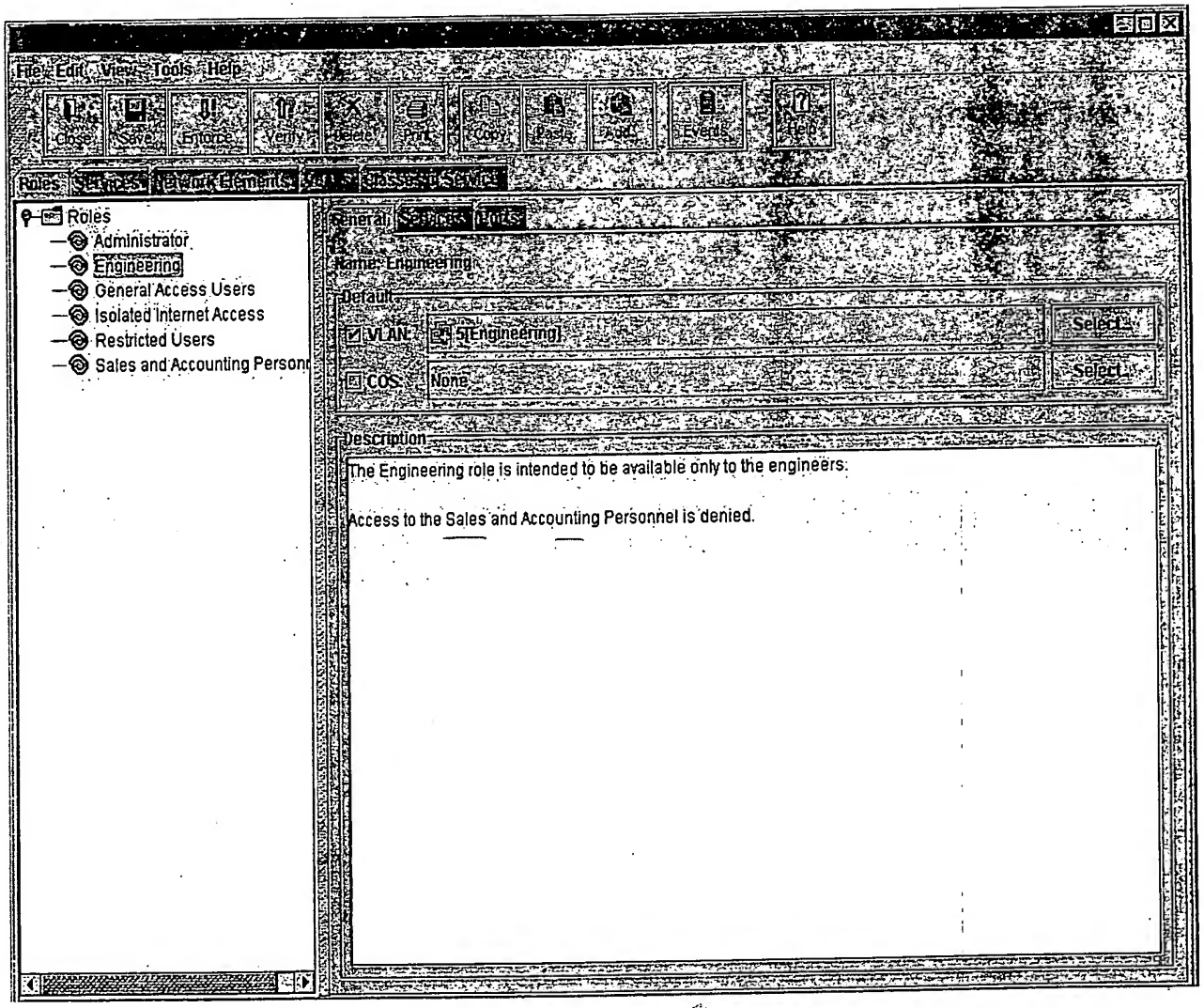

File Edit View Tools Help
Close
Save
Enforce
Verify
Delete
Print
Copy
Paste
Add
Events
Help
Roles
Services
Network Elements
Sets
Class of Service
Roles
Administrator
Engineering
General Access Users
Isolated Internet Access
Restricted Users
Sales and Accounting Personr
General
Services
Ports
Name: Engineering
Default
VLAN:
5(Engineering)
Select...
COS:
None
Select...
Description
The Engineering role is intended to be available only to the engineers.
Access to the Sales and Accounting Personnel is denied.

Fig. 41

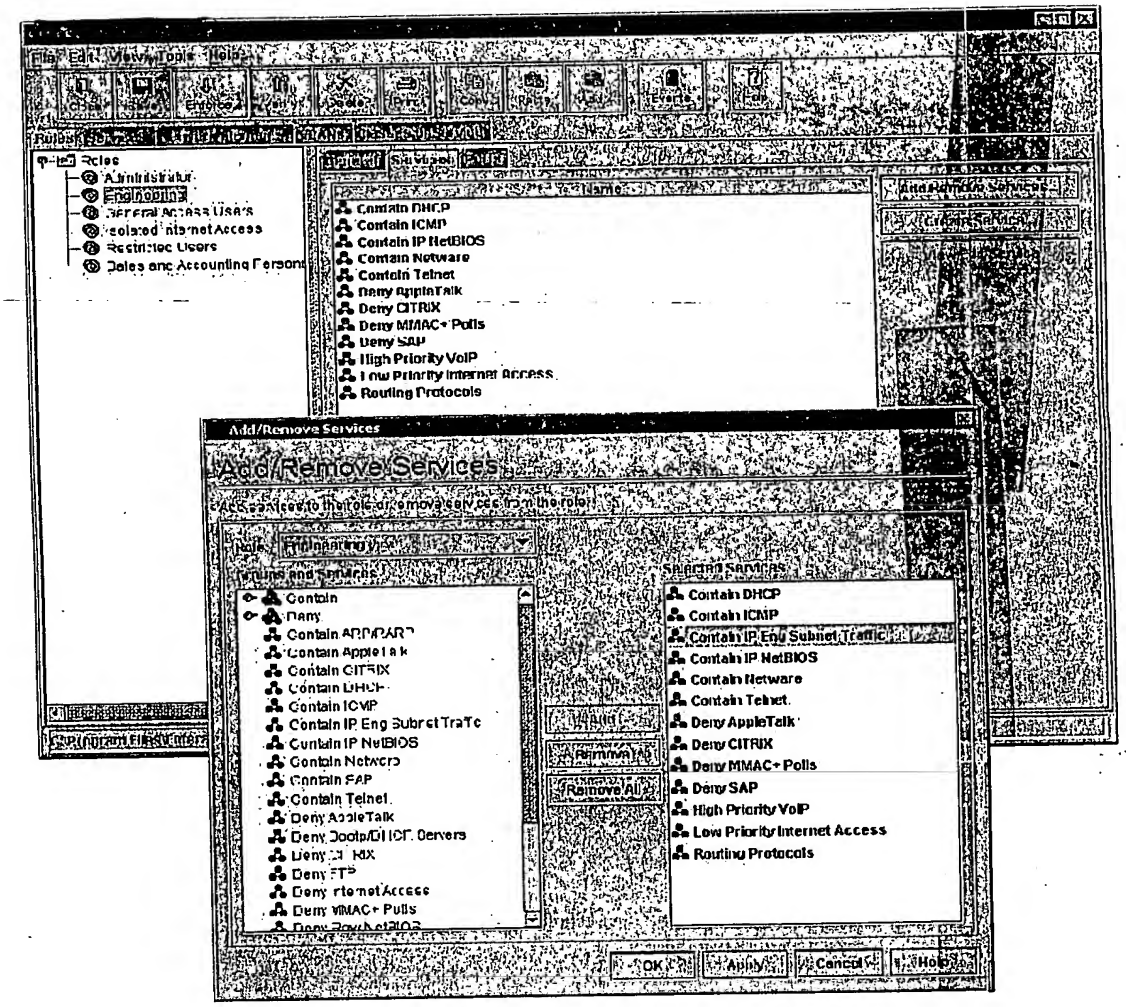

Roles
Administrator
Engineering
General Access Users
Isolated Internet Access
Restricted Users
Sales and Accounting Persons
Contain DHCP
Contain ICMP
Contain IP NetBIOS
Contain Netware
Contain Telnet
Deny AppleTalk
Deny CITRIX
Deny MMAC+ Polls
Deny SAP
High Priority VoIP
Low Priority Internet Access
Routing Protocols
Add/Remove Services
Add/Remove Services
Contain
Deny
Contain AppleTalk
Contain CITRIX
Contain DHCP
Contain ICMP
Contain IP NetBIOS
Contain Netware
Contain SAP
Contain Telnet
Deny AppleTalk
Deny CITRIX
Deny FTP
Deny MMAC+ Polls
Selected Services
Contain DHCP
Contain ICMP
Contain IP Eng Subnet Traffic
Contain IP NetBIOS
Contain Netware
Contain Telnet
Deny AppleTalk
Deny CITRIX
Deny MMAC+ Polls
Deny SAP
High Priority VoIP
Low Priority Internet Access
Routing Protocols
Add
Remove
Remove All
OK
Apply
Cancel
Help

Fig. 12

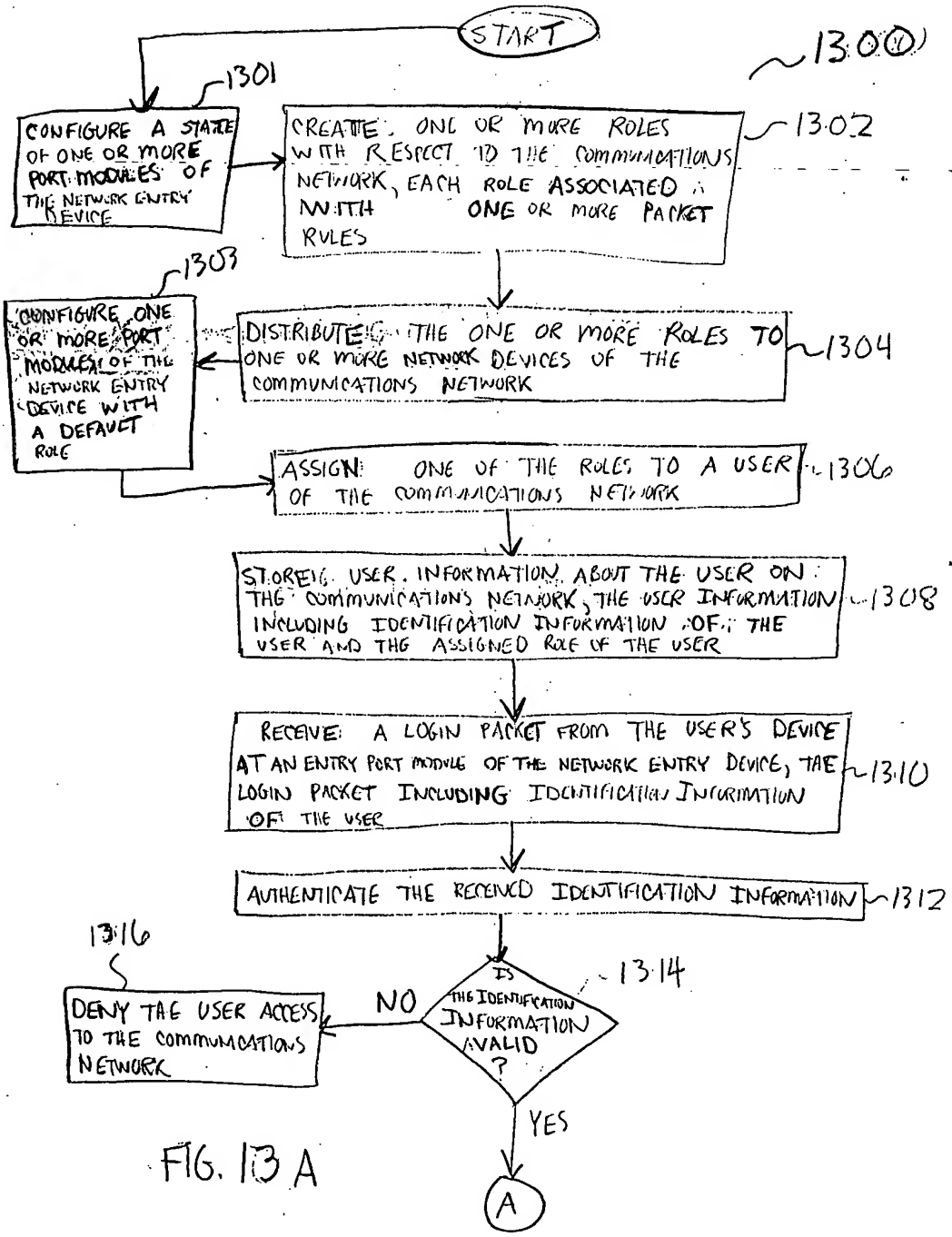


FIG. 13A

10037373-020202

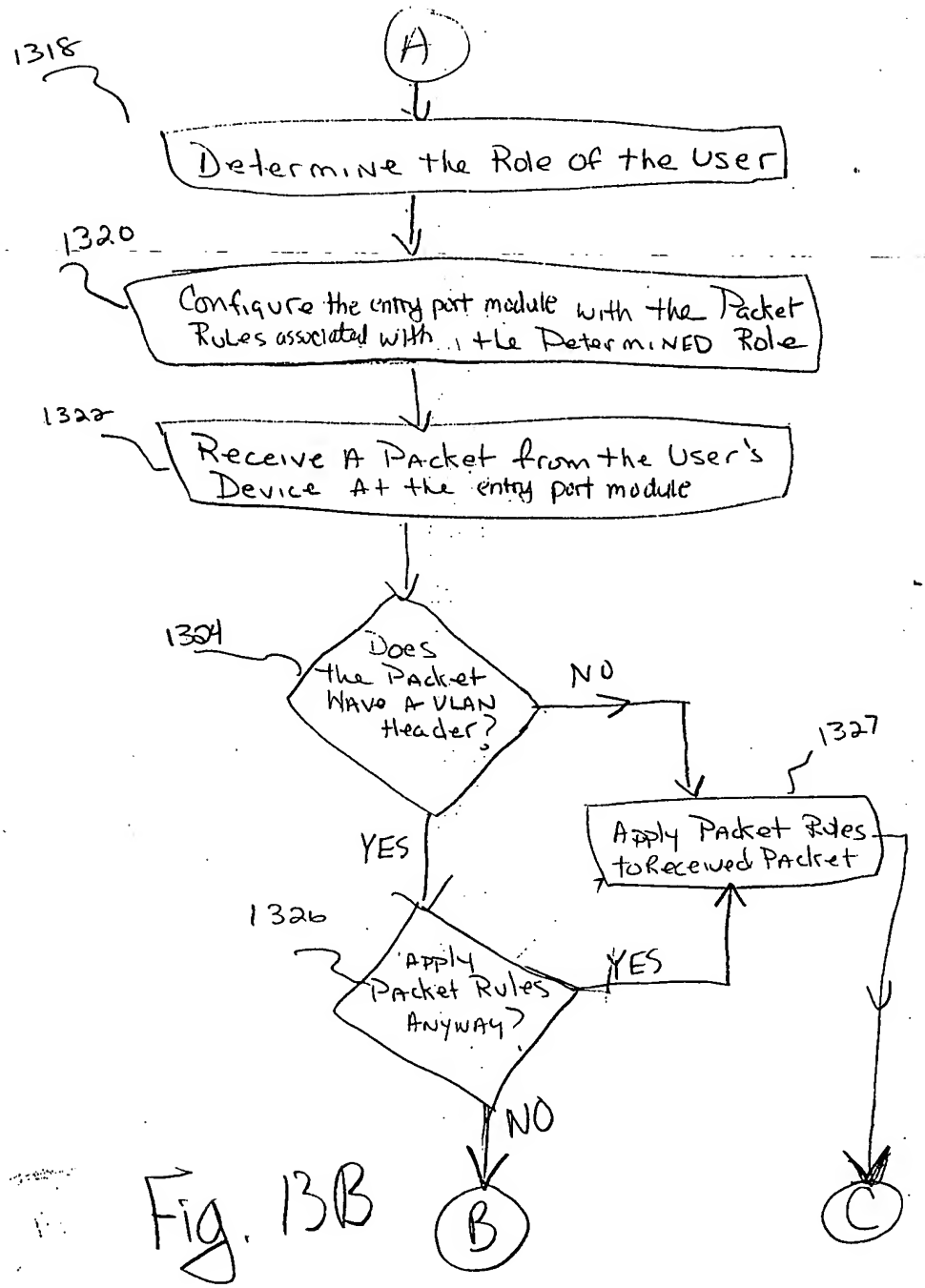

A
1318
Determine the Role of the User
1320
Configure the entry port module with the Packet Rules associated with the Determined Role
1322
Receive A Packet from the User's Device At the entry port module
1324
Does the Packet Have A VLAN Header?
NO
YES
1327
Apply Packet Rules to Received Packet
1326
Apply Packet Rules Anyway?
YES
NO
B
C

Fig. 13B

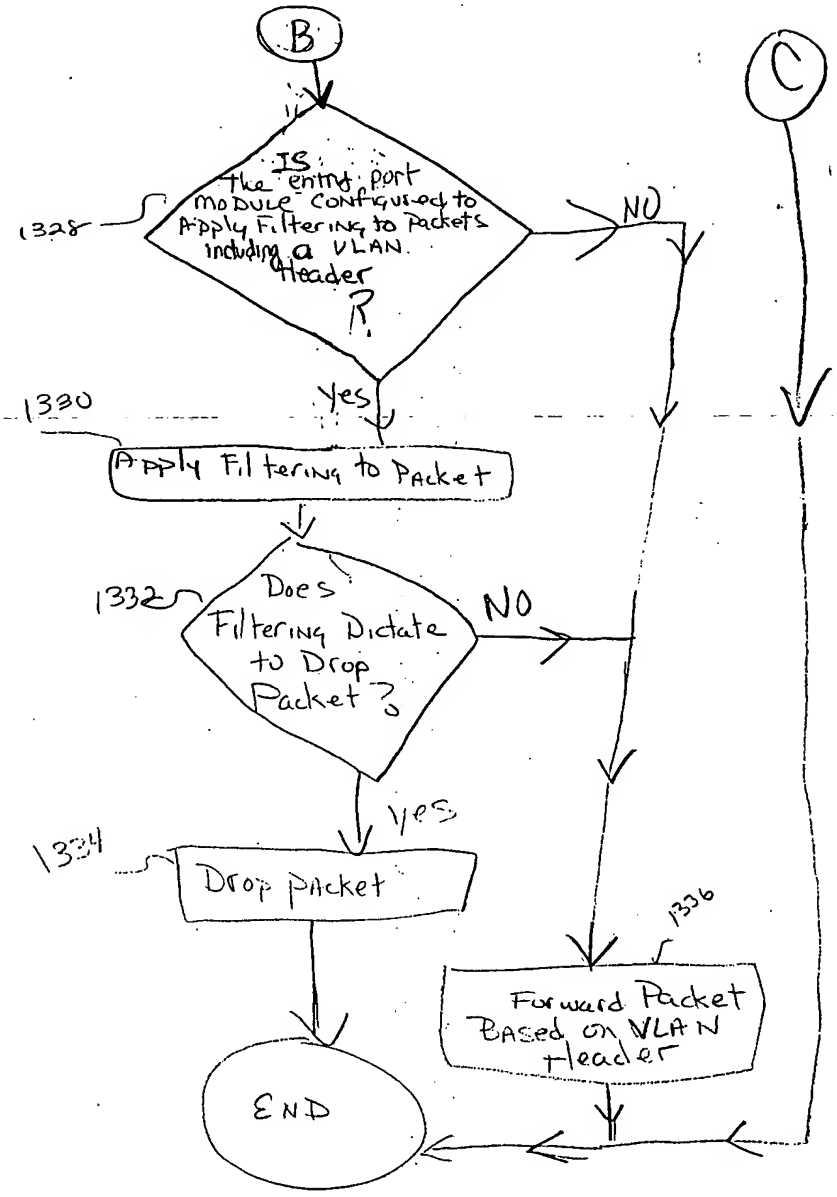

B
C
1328
Is the entry port module configured to apply filtering to packets including a VLAN Header ?
NO
Yes
1330
Apply Filtering to Packet
1332
Does Filtering Dictate to Drop Packet ?
NO
Yes
1334
Drop packet
1336
Forward Packet Based on VLAN Header
END

Fig. 13C

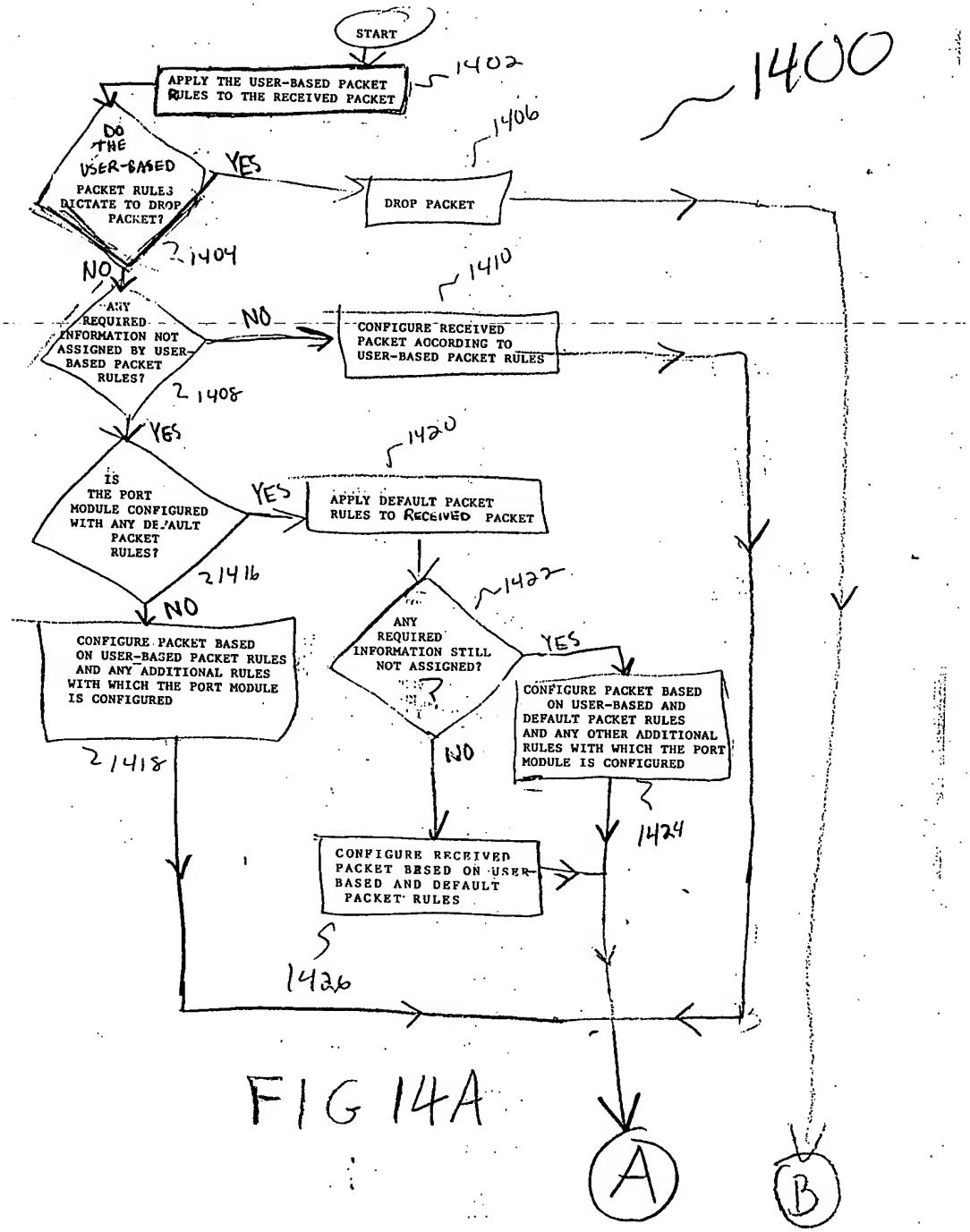

START
APPLY THE USER-BASED PACKET RULES TO THE RECEIVED PACKET
1402
1400
DO THE USER-BASED PACKET RULES DICTATE TO DROP PACKET?
YES
1406
DROP PACKET
NO
1404
ANY REQUIRED INFORMATION NOT ASSIGNED BY USER-BASED PACKET RULES?
NO
1410
CONFIGURE RECEIVED PACKET ACCORDING TO USER-BASED PACKET RULES
1408
YES
IS THE PORT MODULE CONFIGURED WITH ANY DEFAULT PACKET RULES?
YES
1420
APPLY DEFAULT PACKET RULES TO RECEIVED PACKET
1416
NO
CONFIGURE PACKET BASED ON USER-BASED PACKET RULES AND ANY ADDITIONAL RULES WITH WHICH THE PORT MODULE IS CONFIGURED
1418
ANY REQUIRED INFORMATION STILL NOT ASSIGNED?
1422
YES
CONFIGURE PACKET BASED ON USER-BASED AND DEFAULT PACKET RULES AND ANY OTHER ADDITIONAL RULES WITH WHICH THE PORT MODULE IS CONFIGURED
NO
1424
CONFIGURE RECEIVED PACKET BASED ON USER-BASED AND DEFAULT PACKET RULES
1426
A
B

FIG 14A

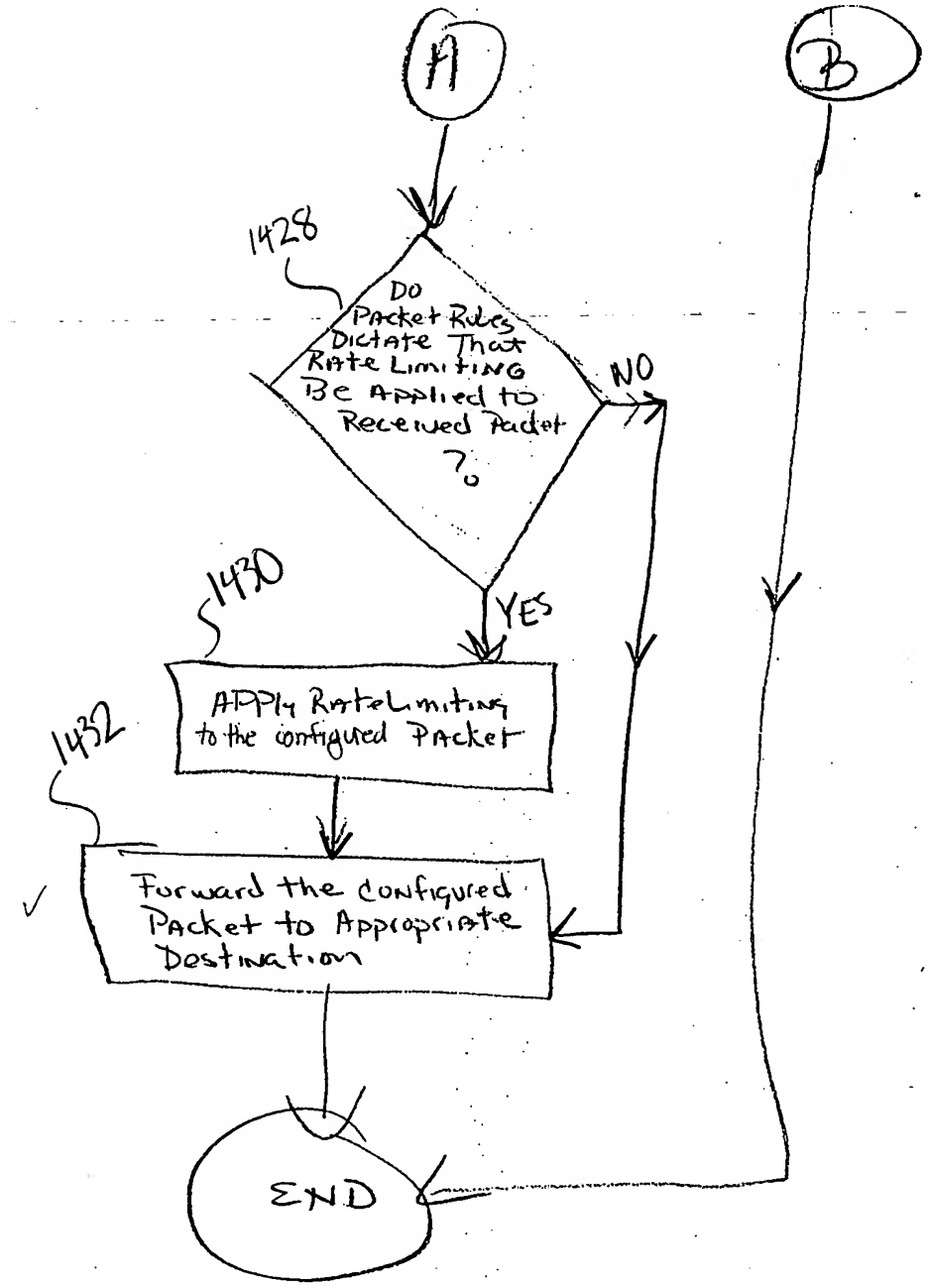

A
B
1428
DO Packet Rules Dictate That Rate Limiting Be Applied to Received Packet ?
NO
YES
1430
APPLY Rate Limiting to the configured PACKET
1432
Forward the configured PACKET to Appropriate Destination
END

FIG. 14B

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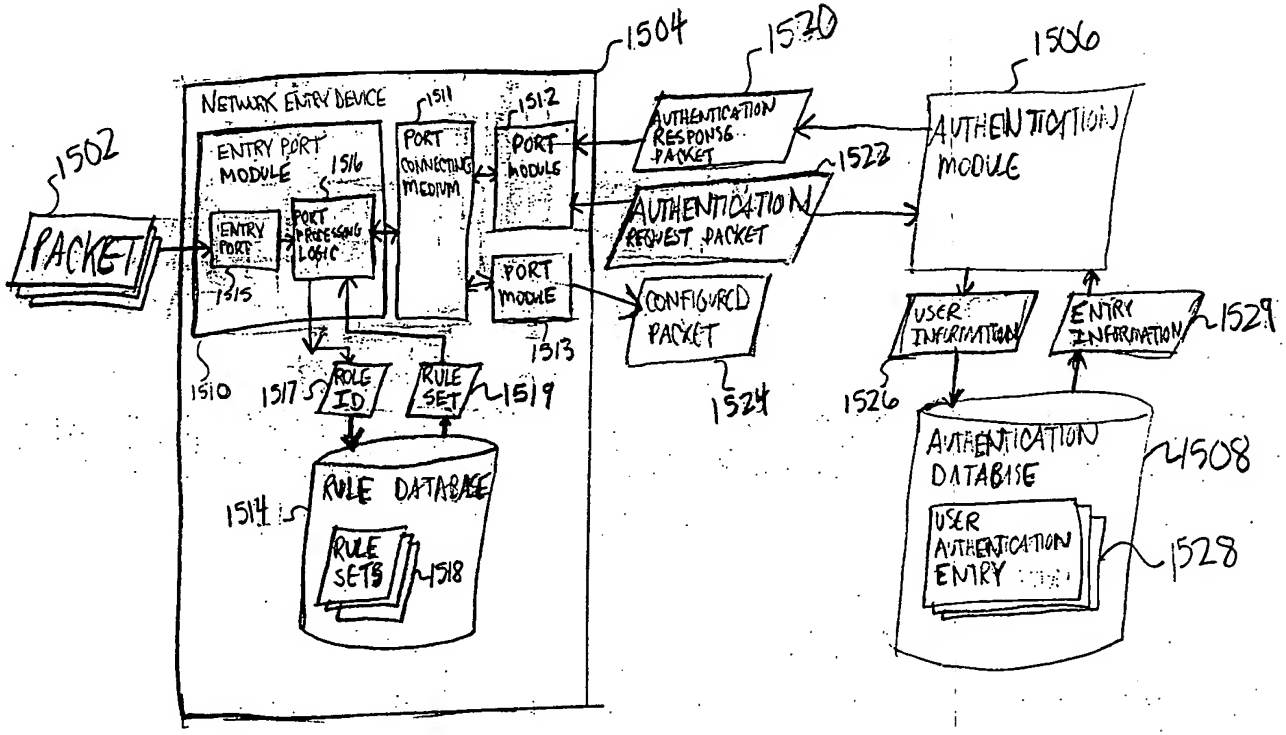

FIG. 15